NOTES, ABSTRACTS, AND REVIEWS.

THE METEOROLOGICAL STATION ON JAN MAYEN.[1]

[Excerpt from United States Consular Reports.]

On August 1, 1921, Mr. Hagbard D. I. Ekerold, an American citizen, left Norway with two small vessels, the *Isfuglen*, 54 tons, and the *Polarfront*, 24 tons, on a meteorological and scientific research expedition to Jan Mayen's Land, a tiny island in the Arctic, north of Iceland and midway between the North Cape and the Greenland coast. The expedition was sent out under the auspices of the Meteorological Bureau of the Bergen Institute, and with the assistance of the Norwegian Government. A weather observatory, with wireless station, was erected, and Mr. Ekerold, with four assistants, spent the winter on the island. He has just returned to Norway, and has received assurance of support which will enable the station on Jan Mayen to continue as a permanent branch of the Norwegian weather service. The expedition was accompanied by a party of English scientists who studied plant and animal life on the island, and the following from an address by Mr. J. M. Wordie, a member of the party, before the British Geographical Society seems of general interest.

Discussing the results of the expedition, Mr. Wordie says that the island is apparently unremunerative commercially, but that—

the Norwegians, however, have realized its importance in another field. Their country is peculiarly dependent on coastwise shipping, and in the past this has suffered very heavily from unexpected northerly and northwesterly gales. The worst gales, moreover, come from a "blind corner" from which no weather reports are available. Jan Mayen fills that spot, and its importance has just been recognized by Norwegian meteorologists. Professor Bjerknes's (Director of the Bergen Meteorological Bureau) knowledge of the scientific and practical possibilities of a wireless station on Jan Mayen had to be supplemented, however, by Engineer Ekerold's enthusiasm and energy before the present station was set going. Ekerold put forward his plans in February, and after an interval of months was finally able to get a grant of about £2,000 from the Storthing. After that, the affair appeared simple. In reality it was the reverse. To stow the long tree trunks destined to be wireless masts in the two small ships was in itself a problem not easy to solve. Both ships left Aalesund heavily overburdened with deck cargoes. The next difficulty was to land the gear in the heavy surf. This difficulty, too, was overcome and the heavy material carried to the chosen site—a small plateau of volcanic sand, but frozen firm as iron at a depth of 2 feet. Work started on August 8. On September 17 the erecting party was able to leave for Norway in the *Isfuglen*, the engine at the station by then being already in running order and both masts (150 feet high) erected. It was possible to speak Norway with a single mast; with both it was a very simple proposition. Weather reports began at once and continued till September 24. On that day, however, a fierce gale raged all up and down the Norwegian coast; no further wireless messages came through, for in Jan Mayen, owing to faulty couplings, both masts collapsed in the gale. On October 19, however, Ekerold spoke Norway once more; he and his four companions had succeeded in putting shorter masts from the remains of the collapsed originals. The station, therefore, is now at last in running order, and messages are being received daily. It remains for the Norwegian weather bureau to gather and profit by the fruits of Ekerold's painstaking efforts.

ERRONEOUS REPORT OF EXCESSIVE RAIN.

According to a news report originating at Houston, Tex., 8.35 inches of rain was said to have fallen at Thornton, Tex., on July 19, within 40 minutes. On investigation by the local office of the Weather Bureau at Houston, Tex., it is found that the original report was seriously in error—the rainfall on the date in question being about an inch.

This note of explanation is published in the belief that it will prevent hydrographers from giving weight to the reported rainfall. It may be remembered that in the great rainstorm at Taylor, Tex., of September 9, 1921, which gave the greatest 24-hour rainfall of record in the United States, the 40-minute fall was but 8.02 inches.—*A. J. H.*

[1] Cf., J. M. Wordie: A summer visit to Jan Mayen Island. In *Nature* (London), 109: 15-18.

ON DUST-RAISING WINDS.

By C. W. B. NORMAND.

[Excerpts from *Memoirs of the Indian Meteorological Department*, Vol. XXII, Part VII, 1921, pp. 575-581, bibliog.]

During the rainless, hot weather the whole land surface became parched and the alluvial soil, especially, developed a coating of fine dust [Samarrah, Mesopotamia, 1918]; in the areas of much traffic, the dust lay in places knee-deep. On days of light wind in August and September it was no uncommon occurrence to see three or four dust-devils of great height meandering with the breeze over this plain. These columns had quite sharp boundaries except at the top. They looked ridiculously high for their width, the base being generally of the order of 5 meters in diameter and the height of many at least 300 meters. * * * In their main essentials they did not differ from the similar dust columns of Egypt described half a century ago by Pictit, except that the Mesopotamian dust-devils must be described as having a cylindrical rather than a diverging conical shape. * * *

For the origin of dust-devils a highly unstable vertical distribution of temperature is necessary. The frequency of mirage in Mesopotamia shows that the density of the surface air layers often increases with height; in other words, the temperature lapse-rate near the ground must often exceed 3.4° C. in a hundred meters. * * * Some comparatively small impetus is all that is required therefore to set up a dust whirl on a calm day. * * *

The primary dust storm occurs principally between 4 p. m. and midnight in the months of March, April, May, and September. * * * With two exceptions the dust storms in spring were associated with thunderstorms and were undoubtedly due to the descending currents which are known to occur in front of thunderstorms. In an ordinary high wind the air may on some occasions become so charged with dust that objects can not be seen 30 yards away. * * *

In any physical explanation or mathematical examination of dust raising by wind, it is necessary to distinguish between two processes—(1) the raising of the dust from the ground and the consequent formation of a dusty surface layer of air, and (2) the ascent of dust from the surface to the higher layers. The first would seem to require, as a necessary condition, a relatively large transference of momentum to the surface dust from the air in contact with it. Hence, either (*a*) the surface layers must be moving exceptionally fast or (*b*) an unusually large amount of air strikes the ground at an angle, and on being deflected from its original direction transfers momentum to the surface air. In dust storms caused by high winds (*a*) is mainly operative; in dust columns and primary dust storms probably both (*a*) and (*b*) are of importance.